CHAPTER 1
INTRODUCTION

This chapter describes the M47 Dragon and its components and provides pertinent technical data. The Dragon is a surface-attack, wire-guided, man-portable, shoulder-fired, medium antitank weapon system. It can defeat armored vehicles, fortified bunkers, concrete gun emplacements, and other hardened targets. The individual soldier or a two-man team can operate this weapon. Mechanized infantry gunners can use the Dragon with the M175 guided missile launcher mount. This mount provides a stable platform on either the M113 APC or on the M3 or M122 machine gun tripod. The Dragon can engage targets in daylight (with the daysight) and in limited visibility conditions, such as smoke, fog, or darkness (with the nightsight).

1-1. MAJOR COMPONENTS

The Dragon weapon system consists of a daysight, a nightsight, and a round of ammunition.

a. **Daysight**. The daysight is an electro-optical sight that determines the position of the missile relative to the gunner's line of sight (LOS).

(1) The daysight generates signals that travel by wire to the missile control system. The missile control system fires the appropriate rocket thrusters to keep the missile heading along the gunner's LOS (Figure 1-1).

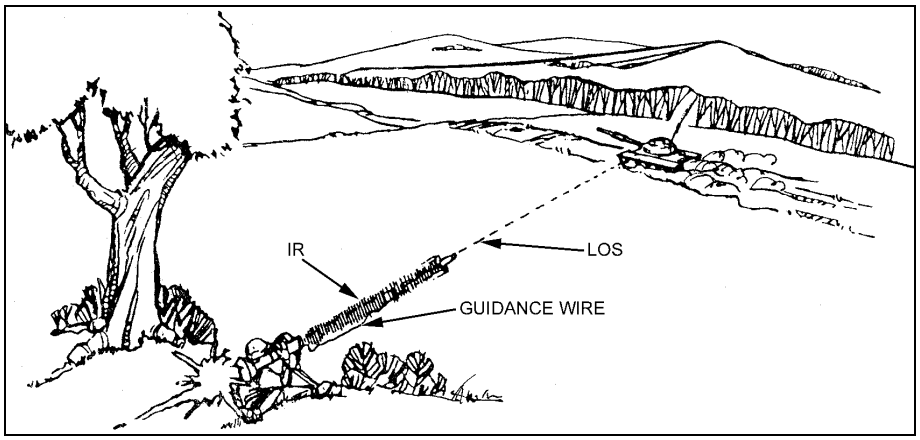

Figure 1-1. Daysight line of sight.

(2) The daysight attaches to and removes quickly from the round (Figure 1-2, page 1-2). The daysight's aluminum housing assembly contains the lens, infrared receiver assembly, and control signal comparator. The firing mechanism, located on the right side of the daysight's housing, consists of a trigger safety plunger and trigger lever bar. A rubber boot seals out moisture from the firing mechanism and safety plunger.

(3) A connector cover provides both mechanical and moisture protection for the electrical connector. A lanyard attaches the cover to the daysight.

(4) Shock absorbers surround the forward and rear ends of the daysight to protect it and its lens. The lens cover is attached to the daysight by a lanyard.

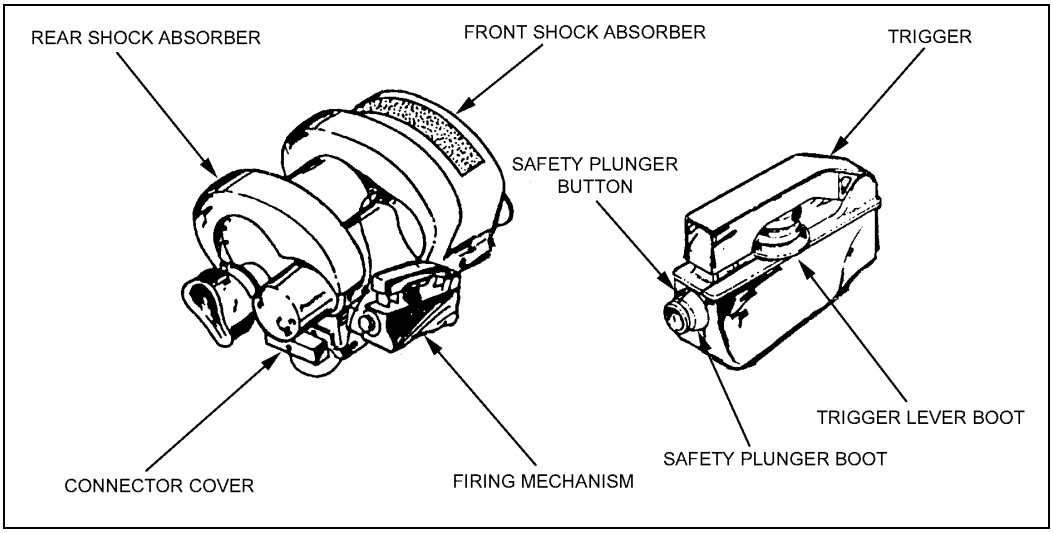

Figure 1-2. Daysight parts.

(5) The daysight's lens is a 6-power telescope. It magnifies the image across a 6-degree field of view (FOV) to help the gunner locate, identify, and track targets. A fitted and molded rubber eye guard protects the gunner's eyes and allows him to adjust rapidly to the sight (Figure 1-3). The infrared receiver consists of an objective lens assembly, graded filter, infrared detector, and nutator mirror. The sensor detects the missile's infrared output while discriminating against background signals. It detects any deviations or excursions of the missile from the gunner's LOS.

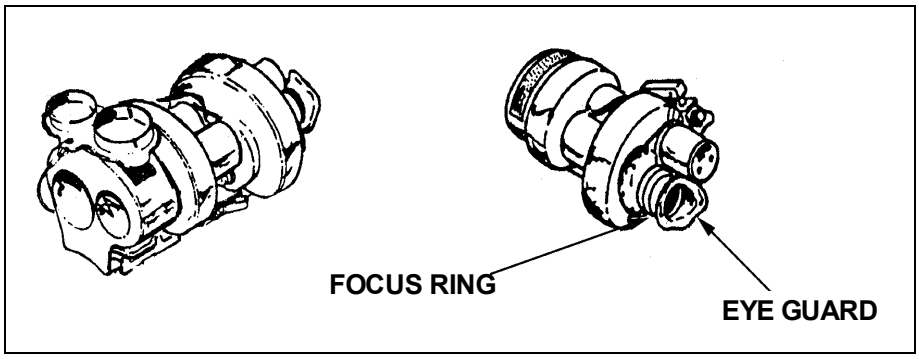

Figure 1-3. Daysight lens and rubber eye guard.

(6) The daysight's telescopic lens and infrared receiver align to define the LOS to the target. The tapered cross hair helps the gunner concentrate on the center of his FOV. Then, he can quickly place the cross hairs on the target's center of mass. He uses the stadia lines to determine the range to the target (Figure 1-4). For example, the stadia lines show how large a standard 3-meter by 6-meter Soviet-built vehicle would appear at the Dragon's maximum engagement range of 1,000 meters.

b. **Nightsight**. At dusk, or anytime the light level drops below what is needed to use the daysight, Dragon gunners switch to the nightsight (Figure 1-5). It attaches to the round the same as the daysight.

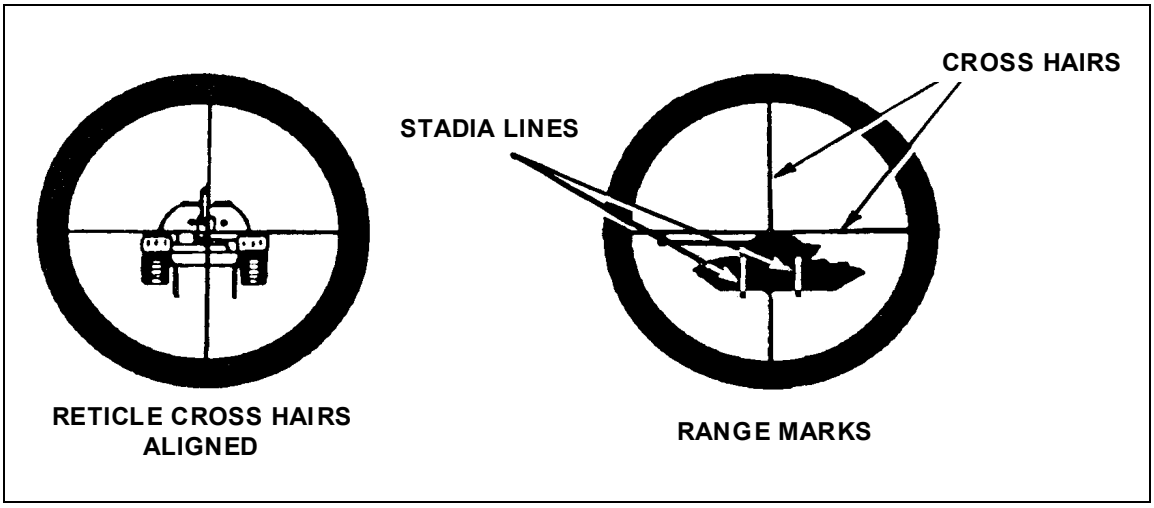

Figure 1-4. Daysight reticle and stadia lines.

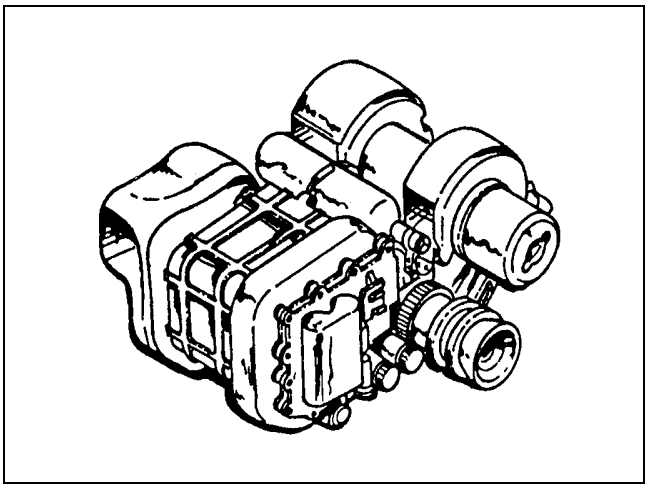

Figure 1-5. Nightsight.

(1) The passive, 4-power AN/TAS-5 nightsight has a 3.4-degree by 6.8-degree FOV. The nightsight is larger and heavier than the daysight. The nightsight converts heat emissions (infrared energy) from a target area into electrical signals, then to visible light (Figure 1-6, page 1-4). This enables the nightsight to display a real-time scene. Objects warmer than the ambient (surrounding) temperature appear in shades of red; cooler objects appear black. Like the daysight, the nightsight monitors the missile and sends commands to keep it on the gunner's line of sight.

(2) The firing mechanism, control system, and guidance system are the same as those on the daysight.

(3) The externally mounted 4.8-volt DC battery and coolant cartridge enable the nightsight to function without an external power source. If the appropriate accessory equipment is available, the nightsight can use military vehicle power.

(4) The nightsight has more controls and operates differently than the daysight.

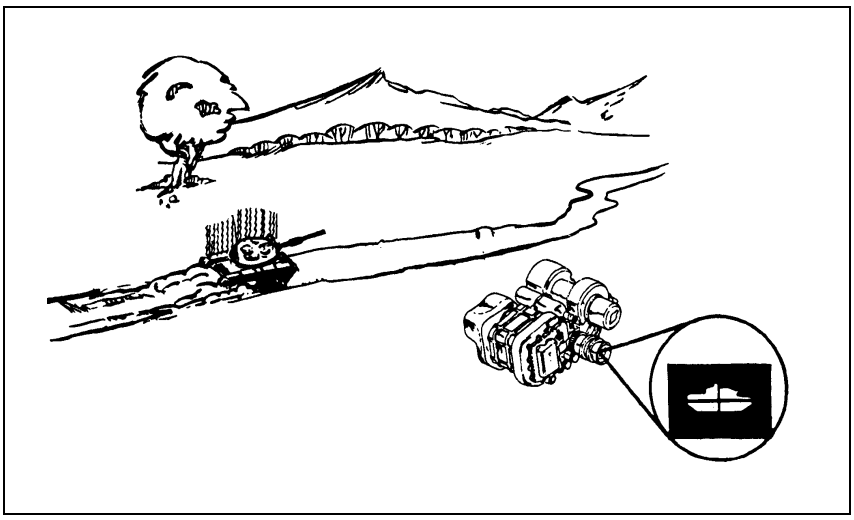

Figure 1-6. Nightsight's infrared (heat) capability.

(a) The ACTUATOR switch (Figure 1-7) turns the system on and off. This four-position switch allows the gunner to evaluate the operating condition of the nightsight. It is normally set to the OFF-LOCK position. Rotating the switch to the AIR-BATT-CHECK position allows the gunner to check the condition of the coolant cartridge and battery. If the indicator light is off and the coolant cartridge and battery conditioner are good, the gunner rotates the switch to the ON position to operate normally.

CAUTION

Use the fourth position, RELEASE, to release an expended coolant cartridge.

(b) The gunner uses the focusing ring to adjust the focus. The brightness (*BRT*) and contrast (*CTRS*) controls work the same as those on a television set (Figure 1-8, page 1-5).

c. **Ammunition**. The Dragon's ammunition is an expendable component consisting of both the missile and the launcher itself (Figure 1-9, page 1-6). The missile is installed in the launcher at the factory and is shipped ready to fire. The launcher serves as a storage and carrying case for the missile before it is launched. The Dragon has two types of missiles: the M223 practice round, which has an inert warhead, and the M222 HEAT round. The launcher consists of—

- A smooth-bored fiberglass tube.
- A breech and gas pressure generator assembly.
- A wiring harness.
- A sling.
- Forward and rear shock absorbers.
- A sight battery, which provides power to operate the sight and fire the missile.
- A sight support bracket, which houses the Dragon's electrical connectors.
- A bipod, which supports the weapon system during dismounted firing.

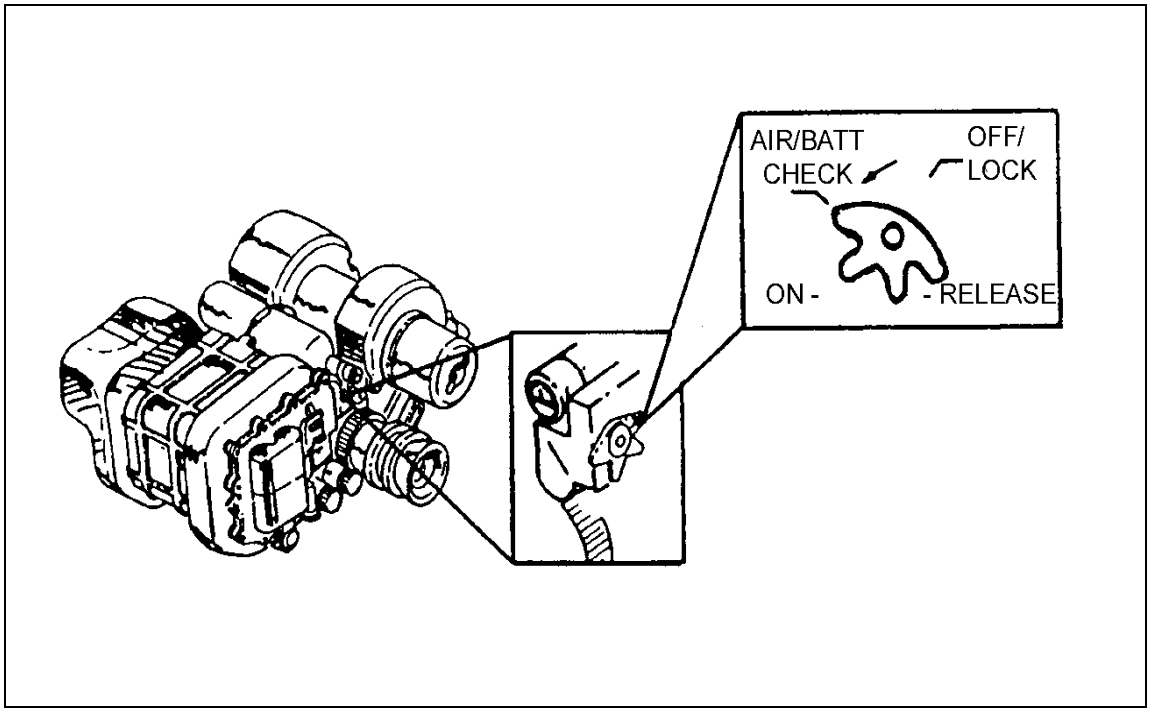

Figure 1-7. Nightsight actuator switch.

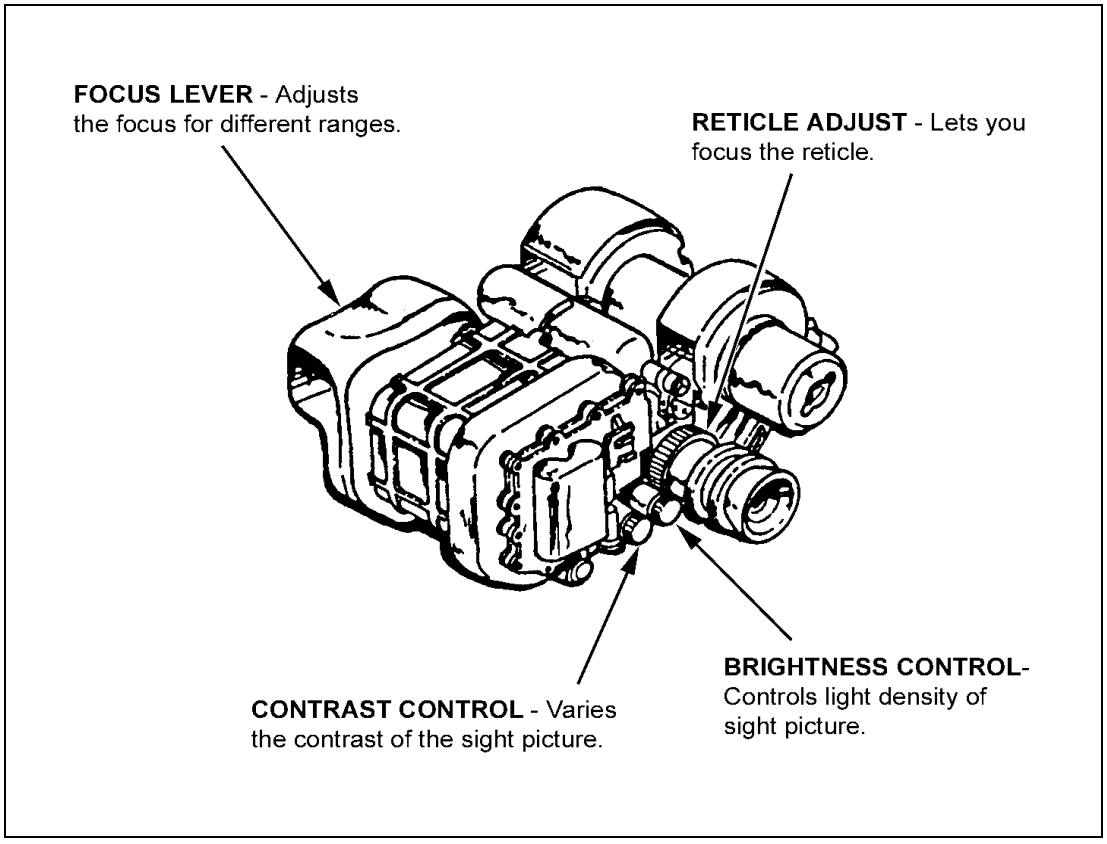

Figure 1-8. Nightsight controls.

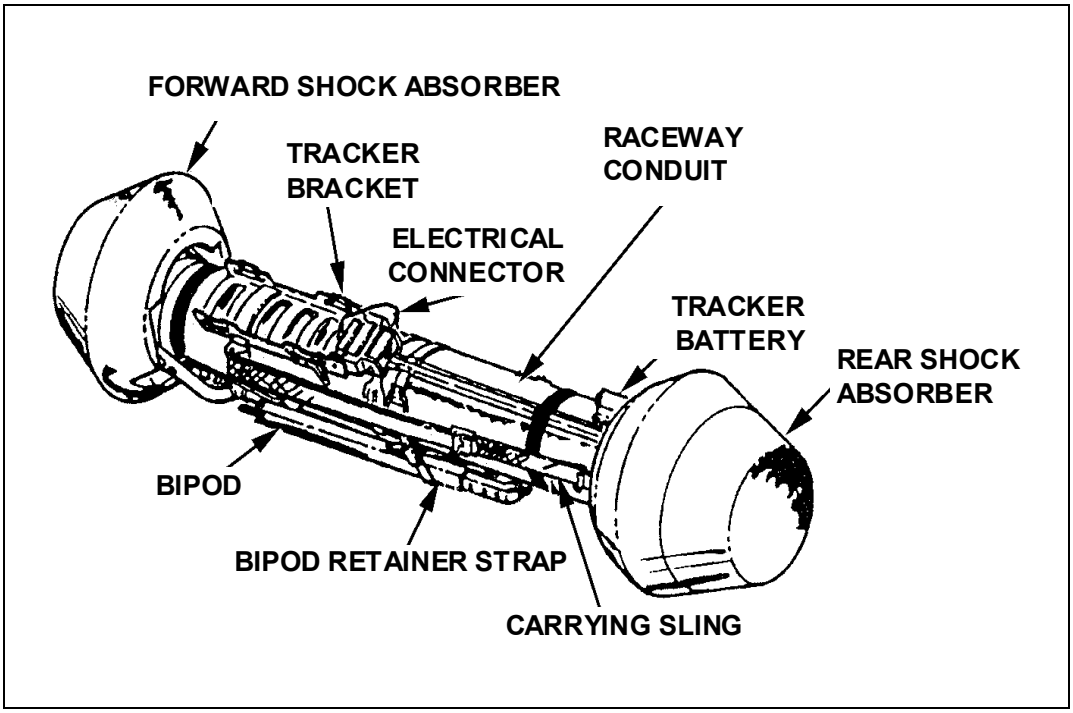

Figure 1-9. External components of the M222 HEAT (tactical) round.

1-2. TECHNICAL DATA

Table 1-1 shows technical data for the Dragon.

AMMUNITION	M222 HEAT round	Weight	14.60 kg	(25.29 lb)
		Missile Length	744 mm	(29.39 in)
		Launcher Length	1,154 mm	(44.10 in)
	M223 inert practice round	Weight	4.70 kg	(10.40 lb)
		Missile Length	846 mm	(33.32 in)
		Launcher Length	1,154 mm	(44.10 in)
OPERATIONAL CHARACTERISTICS		Maximum range	1,000 m	
		Minimum range	65 m	
DAYSIGHT--Infrared Tracker, Guided Missile, SU-36/P		Weight	3.10 kg	(6.75 lb)
		Length	196 mm	(7.72 in)
NIGHTSIGHT--Night Vision Sight, Tracker, Infrared, AN/TAS-5		Weight	9.82 kg	(21.65 lb)
		Length	368 mm	(14.50 in)

Table 1-1. Technical data for the M47 Dragon.